Space Weather Highlights **SWPC PRF 1851**
14 February - 20 February 2011 **22 February 2011**

Solar activity ranged from low to high levels. The period began with moderate activity levels due to an M2.2/1F flare from Region 1158 (S21, L=33, class/area Ekc/620 on 16 February). Associated with this flare was a Type II Sweep with an estimated shock velocity of 1479 km/s and a 150 sfu Tenflare. A slow-moving, faint, full-halo CME was observed in LASCO C2 imagery, first seen at 14/1812Z, and was associated with the M2.2 event. Activity increased to high levels on 15 February as Region 1158 produced an impulsive X2.2 at 15/0156Z. Associated with this event were multi-spectral radio emissions spanning 25 MHz to 15.4 GHz including Type II (556 km/s) and Type IV Sweeps, a 250,000 sfu Burst measured at 410 MHz and a 1300 sfu Tenflare. In addition, a fast-moving, full-halo CME was observed, first seen in LASCO C2 imagery at 15/0236Z with an estimated plane-of-sky speed of 747 km/s. The X2.2 was the largest x-ray event since December 2006. By 16 February, solar activity decayed to moderate levels. Region 1158 produced an M1.6/1F at 16/1425Z with associated Type II (1386 km/s) and Type IV Sweeps and a 330 sfu Tenflare. Earlier on the 16th, Region 1158 produced an M1.0 at 16/0139Z. Region 1161 (N11, L=331, class/area Ekc/260 on 20 February) produced an M1.1 at 16/0744Z. This region emerged on the disk on 14 February and grew rapidly through the period. By 17 February, activity further decayed to low levels. A C1.1 x-ray event was observed from Region 1158 at 17/2135 with an associated Type II Sweep (1695 km/s). Activity increased to high levels on 18 February due to an impulsive M6.6 x-ray event at 18/1011Z observed from Region 1158. New Region 1162 (N18, L=336 class/area Dai/260 on 18 February) emerged rapidly on the disk and produced three M-class x-ray events, the largest an M1.3 at 18/2104Z. 19 and 20 February saw a return to low solar activity levels.

A greater than 10 MeV proton enhancement was observed at geosynchronous orbit. Proton flux began a slow rise at about 15/0700Z, peaked at 15/1115Z (2.5 pfu) and decayed to background levels by about 16/1500Z

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 14 and 20 February and at normal levels 15 - 19 February.

Geomagnetic field activity ranged from quiet to minor storm levels during the period. Activity was quiet until 14/1800Z when activity increased to unsettled to active levels. Solar wind data indicated a shock arrival at the ACE spacecraft at 14/1456Z. A 12nT sudden impulse, measured at the Boulder magnetometer, was observed at 14/1600Z. Following the shock, solar wind velocities increased from about 300 km/s to near 410 km/s while the total magnetic field (Bt) increased to near 20 nT. The source of this transient was likely an east limb event from late on 11 February. Quiet to active levels persisted through 15/1500Z. Thereafter, and through the end of 17 February, the field was quiet. Early on 18 February, activity increased to unsettled to active levels, with isolated high latitude minor storm periods. A shock passage at the ACE spacecraft was observed at 18/0049Z and shortly after at 18/0136Z, a 33 nT sudden impulse was recorded at the Boulder magnetomter. After the shock passage, solar wind speeds rapidly increased from about 325 km/s to near 500 km/s and reached a maximum velocity of 706 km/s at 18/1203Z. Coincident with the shock, the Bz component of the interplanetary magnetic field dipped south

between -8 to -15 nT, and remained so for a period of about 12 hours. This activity was due to the effects of the CMEs observed from solar activity during the 13 - 15 February timeframe. By 18/2100Z, geomagnetic activity decayed to mostly quiet to unsettled levels, and remained so through the balance of the summary period.

Space Weather Outlook
23 February - 21 March 2011

Solar activity is expected to be at low to moderate levels through 25 February when Regions 1161 and 1162 rotate around the west limb. Very low to low levels will persist until 04 March. Low to moderate levels, with a slight chance for high levels, are expected from 05 - 21 March when old Regions 1158 (S21, L=31), 1162 (N18, L=335) and 1161 (N11, L=331) are due to rotate onto the disk on 05, 09 and 10 March respectively.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be normal to moderate levels from 23 February - 04 March. High levels are expected from 05 - 13 March. A return to normal to moderate levels are expected from 14 - 18 March followed by high levels from 19 - 21 March.

Geomagnetic field activity is expected to be at quiet to unsettled levels from 23 - 24 February due to a recurrent coronal hole high speed stream (CH HSS). Quiet levels are expected from 25 - 26 February. An increase in activity to quiet to unsettled levels are expected from 27 February - 02 March due to another recurrent CH HSS. Quiet levels will persist from 03 - 06 March. Quiet to unsettled levels will return from 07 - 10 March due to a recurrent CH HSS. A brief period of quiet levels are expected from 11 - 13 March. Another recurrent CH HSS will raise activity levels to quiet to unsettled from 14 - 15 March followed by a period of quiet conditions from 16 - 21 March.

Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
14 February	113	90	530	B5.0	11	1	0	6	1	0	0	0
15 February	113	100	785	B5.2	7	0	1	5	1	0	0	0
16 February	114	51	430	B4.2	12	3	0	4	1	0	0	0
17 February	111	51	430	B5.8	12	0	0	5	0	0	0	0
18 February	125	101	770	B8.1	15	5	0	2	0	0	0	0
19 February	109	79	680	B5.7	12	0	0	2	0	0	0	0
20 February	105	103	620	B3.3	3	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ^{2} -day -sr)			Electron Fluence (electrons/cm^2 -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
14 February	1.7e+06	1.5e+04	3.6e+03		3.7e+07	
15 February	7.2e+05	8.5e+04	3.6e+03		1.3e+06	
16 February	6.0e+05	2.9e+04	3.5e+03		1.6e+06	
17 February	7.5e+05	1.5e+04	3.6e+03		2.0e+06	
18 February	2.4e+06	1.3e+04	2.8e+03		9.4e+05	
19 February	1.0e+05	1.3e+04	3.3e+03		1.6e+06	
20 February	2.6e+05	1.4e+04	3.7e+03		6.6e+07	

Daily Geomagnetic Data

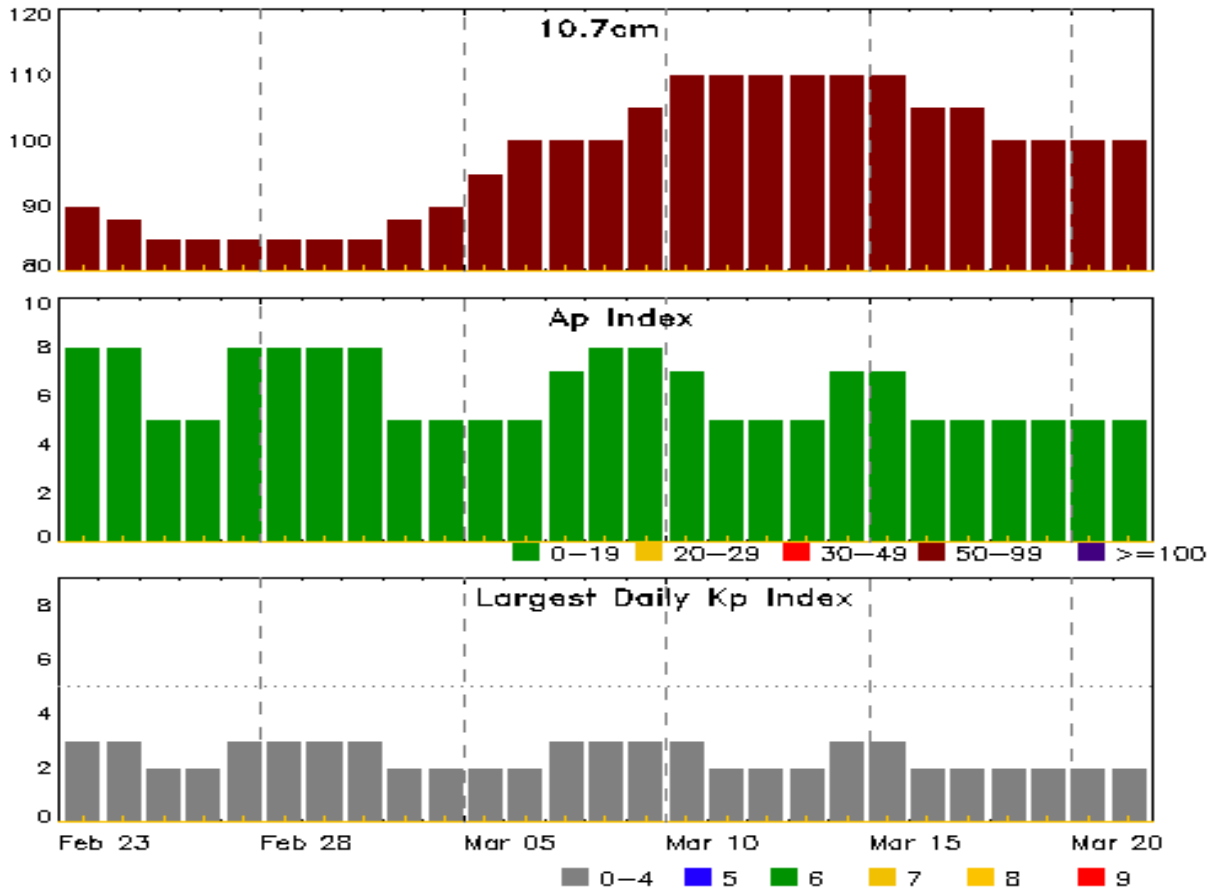
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
14 February	6	0-0-0-0-0-2-3-4	7	0-0-0-1-0-2-3-4	10	0-0-0-0-0-3-4-4
15 February	4	1-2-1-1-1-1-1-2	11	1-1-2-4-4-2-2-1	5	1-1-1-1-2-1-1-2
16 February	1	0-2-0-0-0-0-0-1	2	1-1-0-2-0-0-0-0	2	0-2-0-0-0-0-0-1
17 February	5	0-0-0-0-2-1-4-1	1	0-0-0-0-0-1-1-0	2	0-0-0-0-0-1-1-1
18 February	15	3-4-4-3-3-2-2-1	25	2-5-5-3-5-4-1-0	17	3-4-5-3-3-3-2-1
19 February	3	2-1-1-1-2-0-1-0	9	1-2-3-3-3-3-0-0	5	2-2-2-1-1-1-1-1
20 February	6	1-1-2-2-2-2-2-2	14	1-1-3-5-3-3-2-2	7	1-1-2-3-1-2-2-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
14 Feb 1124	ALERT: Type IV Radio Emission	13/1738
14 Feb 1354	ALERT: Type II Radio Emission	14/1303
14 Feb 1603	SUMMARY: Geomagnetic Sudden Impulse	15/1600
14 Feb 1604	WARNING: Geomagnetic K = 4	14/1605 - 2359
14 Feb 1616	ALERT: Electron 2MeV Integral Flux >= 1000pfu	14/1555
14 Feb 1741	ALERT: Type II Radio Emission	14/1728
14 Feb 1921	WARNING: Geomagnetic K = 5	14/1922 - 2359
14 Feb 1958	ALERT: Geomagnetic K = 4	14/1957
14 Feb 2053	SUMMARY: 10cm Radio Burst	14/1728 - 1742
15 Feb 0152	ALERT: X-ray Flux exceeded M5	15/0151
15 Feb 0216	ALERT: Type IV Radio Emission	14/0155
15 Feb 0233	SUMMARY: X-ray Event exceeded X1	14/0144 - 0206
15 Feb 0238	SUMMARY: 10cm Radio Burst	15/0149 - 0224
15 Feb 0242	CANCELLATION: Type IV Radio Emission	
15 Feb 0243	ALERT: Type IV Radio Emission	15/0155
15 Feb 0244	CANCELLATION: X-ray Event exceeded X1	
15 Feb 0246	SUMMARY: X-ray Event exceeded X1	15/0144 - 0206
15 Feb 0348	ALERT: Type II Radio Emission	15/0151
15 Feb 2219	WATCH: Geomagnetic A >= 20	18/
16 Feb 1446	SUMMARY: 10cm Radio Burst	16/1423 - 1424
16 Feb 1451	ALERT: Type II Radio Emission	16/1423
16 Feb 1452	ALERT: Type IV Radio Emission	16/1431
17 Feb 2225	ALERT: Type II Radio Emission	17/2140
18 Feb 0059	WARNING: Geomagnetic Sudden Impulse expected	18/0140 - 0230
18 Feb 0102	WARNING: Geomagnetic K = 4	18/0140 - 1600
18 Feb 0105	WARNING: Geomagnetic K = 5	18/0145 - 0400
18 Feb 0139	SUMMARY: Geomagnetic Sudden Impulse	18/0136
18 Feb 0418	WARNING: Geomagnetic K = 5	18/0450 - 1000

18 Feb 0528	ALERT: Geomagnetic K = 4	18/0526
18 Feb 1015	ALERT: X-ray Flux exceeded M5	18/1011
18 Feb 1059	SUMMARY: X-ray Event exceeded M5	18/0955 - 1015
18 Feb 1123	WARNING: Geomagnetic K = 5	18/1130 - 1500
19 Feb 0418	WARNING: Geomagnetic K = 4	19/0500 - 1000
20 Feb 1236	ALERT: Electron 2MeV Integral Flux >= 1000pfu	20/1220

Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
23 Feb	90	8	3	09 Mar	105	8	3
24	88	8	3	10	110	7	3
25	85	5	2	11	110	5	2
26	85	5	2	12	110	5	2
27	85	8	3	13	110	5	2
28	85	8	3	14	110	7	3
01 Mar	85	8	3	15	110	7	3
02	85	8	3	16	105	5	2
03	88	5	2	17	105	5	2
04	90	5	2	18	100	5	2
05	95	5	2	19	100	5	2
06	100	5	2	20	100	5	2
07	100	7	3	21	100	5	2
08	100	8	3				

Energetic Events

	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
Date	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	245	2695	II	IV
14 Feb	1720	1726	1732	M2.2	0.009	1N	N56W18	1158			2	
15 Feb	0144	0156	0206	X2.2	0.160			1158	45000	1300	2	2
16 Feb	0132	0139	0146	M1.0	0.005			1158				
16 Feb	0735	0744	0755	M1.1	0.009			1161				
16 Feb	1419	1425	1429	M1.6	0.004	1F	S20W32	1158	9900	330	3	1
18 Feb	0955	1011	1015	M6.6	0.019			1158	230			
18 Feb	1023	1026	1037	M1.0	0.007			1162				
18 Feb	1259	1303	1306	M1.4	0.003			1158				
18 Feb	1400	1408	1415	M1.0	0.005			1162				
18 Feb	2056	2104	2114	M1.3	0.009			1162				

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
14 Feb	0004	0004	0009		SF	S19E01	1158
14 Feb	0131	0137	0148	B9.3			
14 Feb	0235	0242	0246	C1.6	SF	S21E04	1158
14 Feb	0324	0448	0508	C7.1			
14 Feb	0429	0449	0509	C8.3	SF	S20W01	1158
14 Feb	0651	0658	0703	C6.6			1158
14 Feb	0839	0849	0904	C1.8			1158
14 Feb	1151	1200	1226	C1.7			1158
14 Feb	1241	1253	1258	C9.4			1158
14 Feb	1347	1427	1442	C7.0	SF	S20W06	1158
14 Feb	1648	1653	1657	B7.9			
14 Feb	1720	1726	1732	M2.2	1N	N56W18	1158
14 Feb	1923	1930	1936	C6.6	SF	S20W05	1158
14 Feb	2314	2319	2326	C1.2			1158
14 Feb	2340	2346	2357	C2.7	SF	S18W15	1158
15 Feb	0031	0038	0048	C2.7			
15 Feb	0144	0156	0206	X2.2			1158
15 Feb	0427	0432	0437	C4.8			
15 Feb	0758	0801	0805		SF	S20W11	1158
15 Feb	0858	0903	0905		SF	S21W11	1158
15 Feb	1002	1007	1016	C1.0			
15 Feb	1432	1444	1451	C4.8	SF	S20W15	1158

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
15 Feb	1807	1844	1857	C1.7			1158
15 Feb	1930	2033	2053	C6.6	1F	S20W21	1158
15 Feb	2249	2254	2256	C1.3	SF	S18W28	1158
15 Feb	2354	2354	2358		SF	S19W25	1158
16 Feb	0058	0105	0110	C2.0			
16 Feb	0132	0139	0146	M1.0			1158
16 Feb	0156	0200	0205	C2.2			1158
16 Feb	0540	0545	0555	C5.9			
16 Feb	0618	0622	0629	C2.2			
16 Feb	0735	0744	0755	M1.1			1161
16 Feb	0902	0911	0919	C9.9			1158
16 Feb	B0926	U0948	A1007		SF	S21W28	1158
16 Feb	1025	1032	1039	C3.2			1158
16 Feb	1158	1202	1205	C1.0			1158
16 Feb	1419	1425	1429	M1.6	1F	S20W32	1158
16 Feb	1527	1532	1537	C7.7	SF	S20W33	1158
16 Feb	1929	1936	1943	C1.3			1158
16 Feb	2011	2015	2019	C1.1			1158
16 Feb	2106	2111	2114	C4.2	SF	S20W35	1158
16 Feb	2302	0025	0107	C2.8			1158
16 Feb	2308	2310	2315		SF	S20W35	1158
17 Feb	0141	0146	0150	C6.1			1158
17 Feb	0246	0308	0321	C2.3			1158
17 Feb	0409	0415	0422	C1.5			1158
17 Feb	0533	0536	0540	C1.0			1158
17 Feb	0644	0647	0651	C1.2			1158
17 Feb	0809	0813	0818	C1.2			1158
17 Feb	B0847	U0847	A0855		SF	S19W44	1158
17 Feb	0924	0930	0935	C1.9	SF	S20W43	1158
17 Feb	B0947	U1029	A1040	C2.6	SF	S18W46	1158
17 Feb	1038	1044	1049	C2.2			
17 Feb	B1108	U1109	A1118		SF	S20W44	1158
17 Feb	1233	1236	1239	C2.4			1158
17 Feb	B1240	U1240	A1248		SF	S19W47	1158
17 Feb	1549	1554	1604	C1.3			1158
17 Feb	2130	2135	2140	C1.1			1158
18 Feb	0102	0108	0114	C1.7			1158
18 Feb	0320	0334	0340	C2.0			1161

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
18 Feb	0444	0451	0501	C4.0			1161
18 Feb	0627	0633	0639	C8.5			1158
18 Feb	0713	0724	0738	C7.6			1162
18 Feb	0903	0911	0919	C4.2			1162
18 Feb	0955	1011	1015	M6.6			1158
18 Feb	1023	1026	1037	M1.0			1162
18 Feb	1216	1220	1224	C3.0			1162
18 Feb	1259	1303	1306	M1.4			1158
18 Feb	1400	1408	1415	M1.0			1162
18 Feb	1427	1432	1435	C4.0	SF	S20W56	1158
18 Feb	1457	1505	1509	C5.0			1158
18 Feb	1548	1555	1559	C5.5			1162
18 Feb	1636	1639	1641	C2.3			1162
18 Feb	1642	1645	1653	C2.1	SF	N19W01	1162
18 Feb	1748	1753	1802	C3.8			1162
18 Feb	1813	1821	1825	C3.2			1158
18 Feb	1902	1918	1928	C7.1			1162
18 Feb	2056	2104	2114	M1.3			1162
19 Feb	0133	0137	0141	C1.3			1158
19 Feb	0221	0225	0230	C1.8			1158
19 Feb	0256	0303	0311	C3.4			1161
19 Feb	0657	0705	0714	C2.6			1162
19 Feb	0740	0744	0747	C1.9			1158
19 Feb	0800	0804	0812	C8.5	SF	N18W11	1162
19 Feb	1220	1224	1234	C1.1			1162
19 Feb	1450	1453	1455	C1.0			1162
19 Feb	1524	1529	1541	C1.5			1158
19 Feb	1626	1630	1632	C1.9			1158
19 Feb	1639	1643	1645	C6.1	SF	S20W72	1158
19 Feb	2107	2113	2117	C1.9			1158
20 Feb	A0046	U0123	A0145	C1.2			1161
20 Feb	A0245	U0319	A0331	C1.4			1162
20 Feb	0354	0357	0359	C1.7			1161
20 Feb	0625	0628	0630	B7.9			
20 Feb	1746	1837	1909	B6.2			1161
20 Feb	1940	1952	2002	B6.8			1161
20 Feb	2300	2303	2306	B3.2			1161
20 Feb	2331	2336	2349	B5.2			1161

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1155												
08 Feb	N17E26	75	10	2	Cro	3	B								
								0	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 75

			Region 1156												
08 Feb	S19E43	63	10	4	Cro	6	B								
09 Feb	S14E23	64	20	5	Cro	11	B								
10 Feb	S14E09	66	20	5	Dro	11	B								
11 Feb	S21W06	68	40	7	Cro	5	B								
12 Feb	S21W22	70	10	4	Bxo	2	B								
13 Feb	S21W35	71	0	2	Axx	3	A								
14 Feb	S21W49	72	plage												
15 Feb	S21W63	73	plage												
16 Feb	S21W77	73	plage												
								0	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 68

			Region 1157												
08 Feb	N22E36	64	10	1	Cro	3	B								
09 Feb	N22E22	69	20	5	Cso	7	B								
10 Feb	N22E08	67	20	5	Cro	7	B								
11 Feb	N18W04	65	10	5	Bxo	2	B								
12 Feb	N18W18	67	30	4	Cro	5	B								
13 Feb	N18W30	65	40	4	Dso	7	B								
14 Feb	N19W43	65	40	8	Dso	9	B								
15 Feb	N19W57	67	50	8	Dao	9	B								
16 Feb	N19W70	66	10	8	Bxo	2	B								
17 Feb	N19W84	67	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 65

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1158												
11 Feb	S19E25	36	40	5	Cro	5	B								
12 Feb	S19E11	38	40	9	Dsi	12	B								
13 Feb	S20W03	34	120	10	Eac	31	BG	2	1		3	1			
14 Feb	S21W14	36	450	12	Ekc	36	BG	10	1		6	1			
15 Feb	S21W27	36	600	12	Ekc	36	BGD	4		1	5	1			
16 Feb	S21W39	33	620	13	Ekc	19	BGD	9	2		4	1			
17 Feb	S19W52	34	290	13	Eac	17	BGD	11			5				
18 Feb	S19W64	34	310	12	Ehc	25	BGD	5	2		1				
19 Feb	S19W78	35	280	12	Dkc	10	BG	7			1				
20 Feb	S21W88	31	200	10	Dsi	10	BG								
								48	6	1	25	4	0	0	0

Still on Disk.
Absolute heliographic longitude: 34

			Region 1159												
11 Feb	N18E26	35	10	1	Axx	2	A								
12 Feb	N19E09	39	10	2	Bxo	4	B	1							
13 Feb	N19W01	34	20	5	Cso	3	B								
14 Feb	N19W14	34	10	6	Bxo	2	B								
15 Feb	N19W28	38	5	6	Axx	2	A								
16 Feb	N19W42	38	plage												
17 Feb	N19W56	39	plage												
18 Feb	N19W70	40	plage												
19 Feb	N19W84	41	plage												
								1	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 34

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 1160													
13 Feb	N16E74	322	plage					1							
14 Feb	N16E60	323	plage												
15 Feb	N16E46	324	plage												
16 Feb	N16E32	324	plage												
17 Feb	N16E18	325	plage												
18 Feb	N16E04	326	plage												
19 Feb	N16W10	327	plage												
20 Feb	N16W24	328	plage												
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 326

		Region 1161													
14 Feb	N11E52	330	30	5	Bxo	3	B								
15 Feb	N11E38	331	130	8	Dai	13	B								
16 Feb	N13E25	330	120	9	Dhi	9	BG		1						
17 Feb	N12E13	329	140	12	Eac	14	BG								
18 Feb	N12W02	331	200	12	Eai	28	BG	2							
19 Feb	N11W15	332	250	15	Ekc	19	BGD	1							
20 Feb	N11W28	331	260	15	Ekc	39	BG	2							
								5	1	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 331

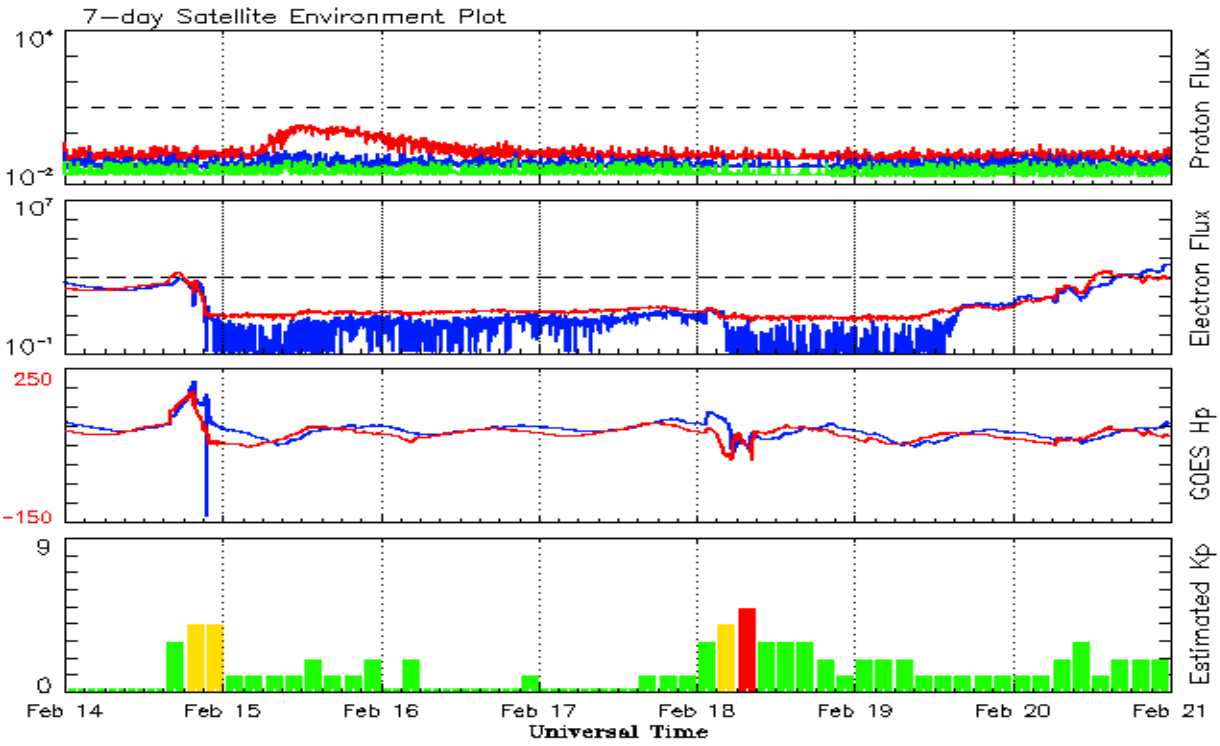
		Region 1162													
18 Feb	N18W06	336	260	7	Dai	18	BG	8	3		1				
19 Feb	N18W19	336	150	8	Dai	20	BG	4			1				
20 Feb	N18W32	335	160	9	Dsi	24	B	1							
								13	3	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 336

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2009					
February	2.5	1.4	0.56	3.1	1.9	70.0	68.8	5	4.7
March	0.7	0.7	1.00	3.4	2.0	69.2	69.0	5	4.6
April	1.2	0.8	1.00	3.7	2.2	69.7	69.3	4	4.3
May	3.9	2.9	0.74	3.8	2.3	70.5	69.7	4	4.1
June	6.6	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
				2010					
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44	23.8	15.5	73.8	79.0	8	5.7
June	17.9	13.6	0.75	25.2	16.4	72.6	79.7	7	5.8
July	23.1	16.1	0.70	25.9	16.8	79.9	80.1	5	6.0
August	28.2	19.6	0.70			79.7		8	
September	35.6	25.2	0.71			81.1		5	
October	35.0	23.5	0.67			81.6		6	
November	36.1	21.6	0.60			82.5		5	
December	22.0	14.5	0.66			84.3		4	
				2011					
January	32.1	19.0	0.59			83.7		6	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8. Solar minimum for Cycle 23 was December 2008.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 14 February 2011

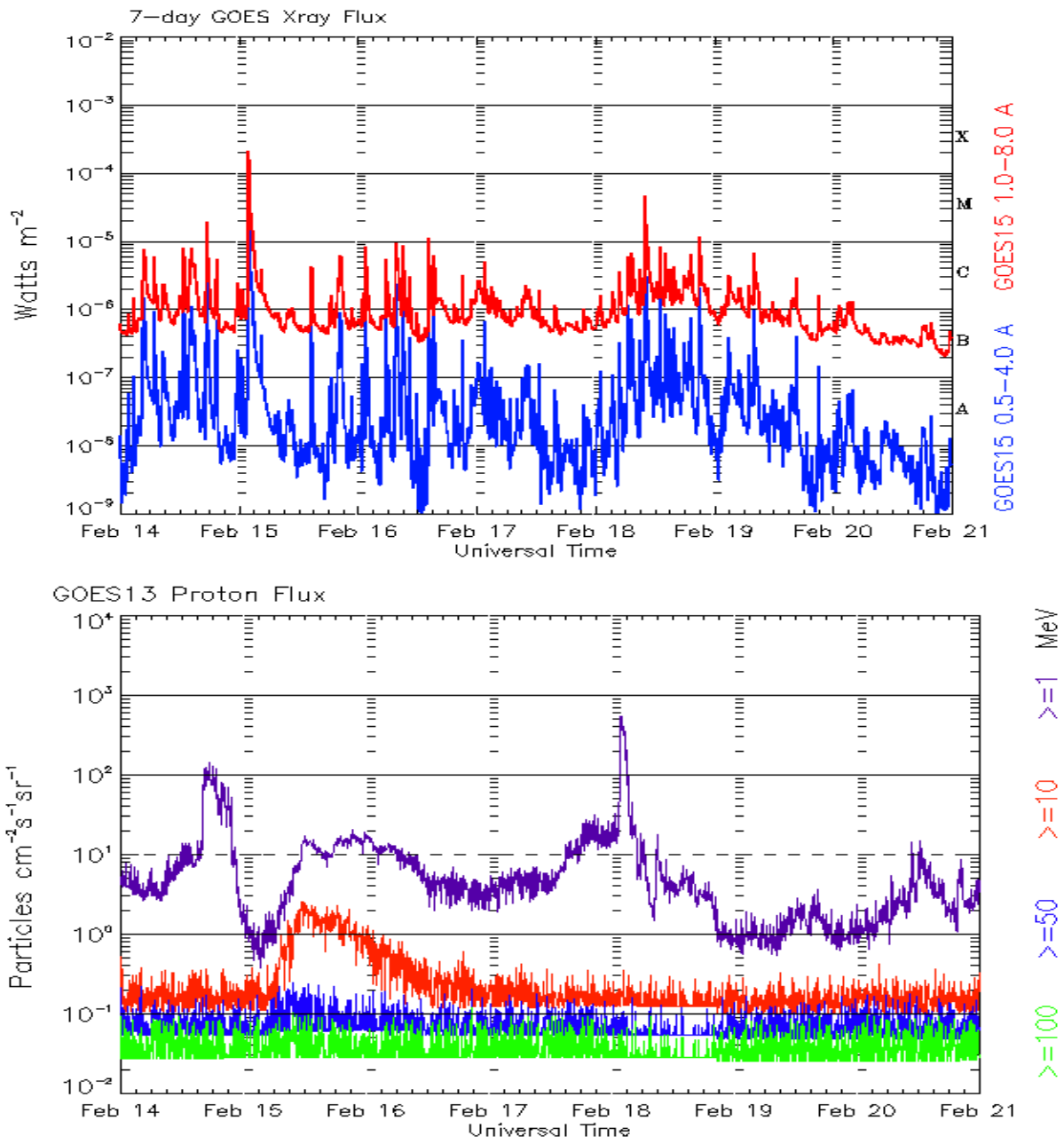
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

Kp plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) and the US Geological Survey. These may differ from the final Kp values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 14 February 2011

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longiture, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minue averaged intergral flux units (pfu = protons/cm^2-sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

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